PATENT COOPERATION TREA

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From the INTERNATIONAL SEARCHING AUTHORITY

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NOTIFICATION OF DECISION CONCERNING REQUEST FOR RECTIFICATION

(PCT Rule 91.1(f))

Applicant's or agent's file reference B00662.70056WO	Date of mailing *(day/month/year)* 05/03/2004
International application No. PCT/US 03/29533	**REPLY DUE** NONE However, see last paragraph below
Applicant BETH ISRAEL DEACONESS MEDICAL CENTER, INC.	International filing date *(day/month/year)* 17/09/2003

The applicant is hereby notified that this International Searching Authority has considered the request for rectification of obvious errors in the international application/in other papers submitted by the applicant to this Authority, and that it has decided:

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coils, transmission line array coils, various other resonant coils, etc. A resonant coil may comprise any number and arrangement of reactive components (e.g., capacitors and inductors) by which resonant electromagnetic fields may be generated.

For simplicity and clarity, various aspects of the present invention will be illustrated in connection with the generally planar coil illustrated in FIG. 2. For example, FIGS. 6 and 9 illustrate coil arrays comprising a plurality of coils schematically depicted as the general conductive loop connected by lumped capacitors. However, this depiction is meant to indicate the presence of a resonant coil and not the specific type or arrangement (e.g., planar, birdcage, etc.). As such, any type of resonant coil could be used. The invention is not limited to the coils specifically illustrated herein and contemplates use with any of the coils mentioned above or any other coils capable of generating resonant EM fields.

FIG. 3 illustrates one embodiment according to the present invention of a method for determining dielectric properties of a body acting as a load on an array of RF coils. The coil array may comprise a plurality of coils each having a resonant frequency. That is, an unloaded coil may be configured to resonate at a generally known nominal frequency. Each coil in the array may be designed to have a same or different nominal resonant frequency.

In step 310, a body (step 305) to be imaged may be positioned proximate to the plurality of coils in the array. In particular, the body is placed in a spatial relationship with the array such that the body acts as a load, causing some measurable loading effect on the array. The body is typically positioned in a generally known relationship with the array. The body may comprise one or more regions with unknown dielectric properties. For example, the body may be a patient having regions of homogeneous and inhomogeneous regions of conductivity and/or permittivity, or the body may be baggage such as airline luggage to be analyzed for items having certain conductivity and/or permittivity characteristics.

In step 320, a change in one or more resonant properties the coil array may be detected. For example, one or more measurements of properties of the coil array may be obtained. As described above, the loading effect resulting from placing the load proximate to the one or more coils will affect various properties of the coils. For example, various impedance characteristics of the coil array may be measured by operating one or more of the coils and measuring the impedance characteristics of one or more other coils in the array.

In step 330, the change in the one or more resonant properties of at least one of the coils may be used to determine dielectric properties of the body. For example, one or more